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Item 10 (b) of the provisional agenda*

NATURAL DISASTER REDUCTION: HAZARD RESISTANT STRUCTURES

Technical session

Addendum

Summary of presentation made on behalf of the global engineering organizations WFEO/UATI by Mr. Stuart Mustow, President, Institution of Civil Engineers, and Dr. Scott Steedman, Member, Institution of Civil Engineers

1. Understanding of the effects of earthquakes or windstorm on structures has advanced considerably in recent years and has led to generally high standards of design codes and regulations in most countries, at least for certain classes of building. The evidence of continuing physical damage and loss of life in recent events, however, confirms the view that implementation of those codes is generally inadequate and that, as a result, many countries face an increasing risk from natural disaster as urbanization accelerates throughout the world. Two demonstration projects being carried out by the Institution of Civil Engineers for WFEO/UATI under the United Nations programme address these issues.

2. In the first project the vulnerability of megacities is being reviewed in collaboration with three cities each of which represents a major element in their national and regional economies: Jakarta, Karachi and Metro Manila. More details of this project are given in the technical session on the effects of disasters on modern societies.

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3. The second project is focused on the difficulties confronted in many countries in the implementation of building codes and regulations. Mitigation through improved construction practice is a goal which is frequently thwarted by the increased cost that the practice can impose. Limited resources for building inspection and control reduce the authority and effectiveness of those departments.

4. Education within the community and increased awareness of the risks can be developed in societies in which there is a recent history of local or national disasters. In countries which have not suffered from natural disasters in living memory, initiatives to mitigate the risk of future loss must, however, be carefully integrated with local political objectives which in general lie in other fields, such as water supply, transport or unemployment.

5. The presentation will illustrate these challenges using examples drawn from case-studies, including experience with the Erzincan (Turkey) earthquake of March 1992 and the Cairo (Egypt) earthquake of October 1992. Also, the important concept of seismic-hazard auditing will be illustrated by a case-study in Colombia.

6. Structural design and detailing is a key component in the mitigation of risk from natural hazard. Goals should be set for all countries for the promotion and adoption of good practice, not only in codes and regulations but also in education and training, building control and quality assurance.